

Post-doctoral position

Development of on-chip atomic sources for inertial sensors

We offer a three-year Postdoctoral Research Associate position in the Quantum Engineering Group at LCAR (Université Toulouse 3) and the Photonics Group at LAAS (CNRS). The Research Associate will undertake researches at the intersection between ultra-cold atoms, atom chip developments and atom interferometers, in the framework of quantum inertial sensors for navigation, and the development of cold atoms for space. The post-doc position is part of a collaboration between LCAR, LAAS, LP2N and iXBlue to advance quantum technology toward the first multi-axis interferometer with ultra-cold atoms using a hybrid atom chip. In particular, he will participate to the development of hybrid atom chips presenting both conducting structures for magnetic trapping and optical features for cooling and atom interferometry manipulations.

1. He will design and fabricate optical gratings on the atom chip, for laser cooling and optical beams for the multi-axis interferometers.
2. The optical grating will be merged with an atom chip, to achieve a compact and reliable BEC source.
3. The chip will be integrated on the miniaturized device to validate the performance of ultra-cold atoms interferometer.

In the context of previous collaboration between LAAS and LCAR, we have already developed an operative cold atom setup. In particular, we demonstrated magnetic trapping with our atom chip, and a first prototype of optical grating was designed and fabricated. Therefore, the study of the hybridization of the two features towards the miniaturized cold atom source is starting without being delayed by new heavy technological developments. The candidate will characterize this hybrid atom chip and will contribute to the design of the next generation of chips for multi-axis sensors, taking into account both experimental results and technological requirements.

Profile: Candidates should hold a PhD in quantum optics or cold atoms experimental physics. A strong motivation for technological processing and development is required, and background knowledge or prior experience in semi-conductor cleanroom processing will be welcomed.

Position details: The postdoc position is funded with an ANR grant (ANR MiniXQuanta). We offer an 18 months (extendable up to 36) fixed term contract starting in 2021, with a per annum salary from 25 000 € to 36 000 € depending on the seniority. The research will take place on the campus of Université Paul-Sabatier, in the south of the vibrant and history-rich city of Toulouse, at the heart of the South-West of France.

Laboratory:

Interested candidates can contact:

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